Arsenic Contamination in Southeast Wisconsin: Sources of Arsenic and Mechanisms of Arsenic Release

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Moderate to high levels of arsenic contamination occur in groundwater throughout eastern Wisconsin. Previous studies have shown that oxidative dissolution of arsenic-bearing sulfide minerals is the likely mechanism controlling high levels of arsenic contamination in the Fox River Valley area. Our preliminary work indicates that geologic and hydrogeologic conditions contributing to arsenic-impacted wells in southeast Wisconsin differ from those in the Fox River Valley. Thus, geochemical mechanisms of arsenic release other than sulfide oxidation, such as the reduction of arsenic-bearing iron-(hydr)oxides, may affect groundwater supplies in southeast Wisconsin. We propose to use groundwater chemistry data, lithologic, mineralogic, and well construction information to identify geologic sources of arsenic. Bench-scale leaching experiments and geochemical modeling will be used to examine the mechanisms controlling the release of arsenic to the groundwater. The objectives of this study are to identify the geologic source(s) of arsenic and the geochemical mechanism(s) and environmental conditions that cause release of arsenic to well water in southeast Wisconsin.